Unlocking Aquaculture Potential with Aqua-DST in Upper Myanmar

Empowering Smarter Decisions for Sustainable Aquaculture Development

Aquaculture in Myanmar and Southeast Asia faces increasing risks from climate change, such as flooding and drought. At the same time, it is calling thrust to livelihoods for food security and economic growth, which brings to intervention with enhancing food security enriched with protein and poverty alleviation within the region. However, planning new fishponds without considering environmental and socio-economic factors often leads to inefficiencies and losses. To bridge this gap, the **Aquaculture Decision Support Tool (Aqua-DST)** was created—a powerful, user-friendly dashboard designed to guide sustainable aquaculture development through science-based suitability analysis.

Why Aqua-DST Matters

Many aquaculture projects struggle due to poor connection between market and input supply sources, lack of infrastructure, and climate-related risks. In Myanmar, restrictive land policies have further hindered inland aquaculture growth, despite its potential to generate higher income and employment than traditional rice farming. Aqua-DST helps overcome these challenges by providing a data-driven approach to identifying the most suitable areas for fishpond expansion.

Aqua-DST has already been deployed across **170 townships in Upper Myanmar**, covering key regions such as Kachin, Magway, Mandalay, Sagaing, and Shan State. The

tool has been designed to support the identification of priority areas for aquatic food system development.

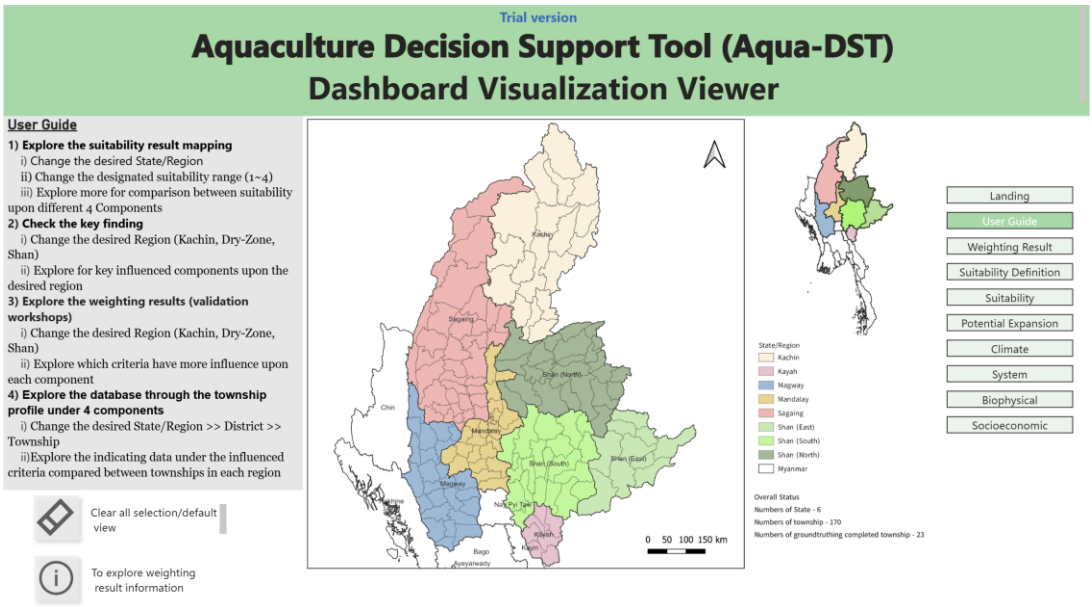

Figure 1. Aqua-DST dashboard landing page and study area

A Smarter Way to Plan Aquaculture Expansion

Aqua-DST integrates multiple data sources—climate-induced hazards – flood and drought, water availability, aquaculture infrastructure, biophysical and socio-economic conditions—to assess land suitability for aquaculture. The tool's **interactive dashboard** allows users to explore by changing the suitability ranges and comparing suitability scores across different locations on the maps and making informed decisions about aquaculture development and investment opportunities.

The tool categorizes aquaculture development suitability into four levels:

1. **Least Suitable (0-25%)** – Significant challenges exist, requiring major interventions to support aquaculture.
2. **Moderately Suitable (25.1-50%)** – Feasible with targeted improvements, such as better water management.
3. **Suitable (50.1-75%)** – Most conditions are favorable, needing only minor enhancements.
4. **Most Suitable (75.1-100%)** – Ideal areas with strong potential for rapid aquaculture growth.

Users can refine their analysis by adjusting filters for different factors, such as climate risks, aquaculture system infrastructure, biophysical, and socioeconomic. Not only can users identify the potential expansion areas of land use and water bodies, but they can make the **species selection** for their desired townships. The **township profile database** provides deeper insights into climate-hazards, system, biophysical and socio-economic conditions, allowing decision-makers to develop **customized strategies** for aquaculture expansion.

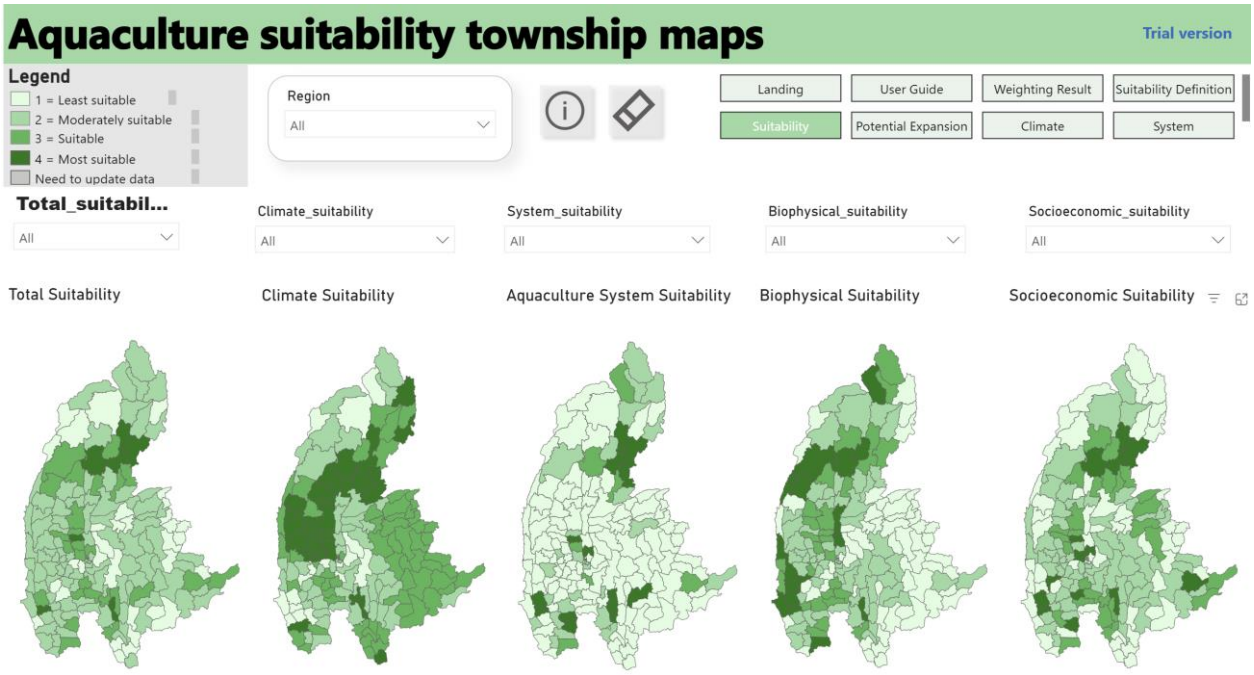

Figure 2. Suitability map for identification of priority areas for aquaculture expansion

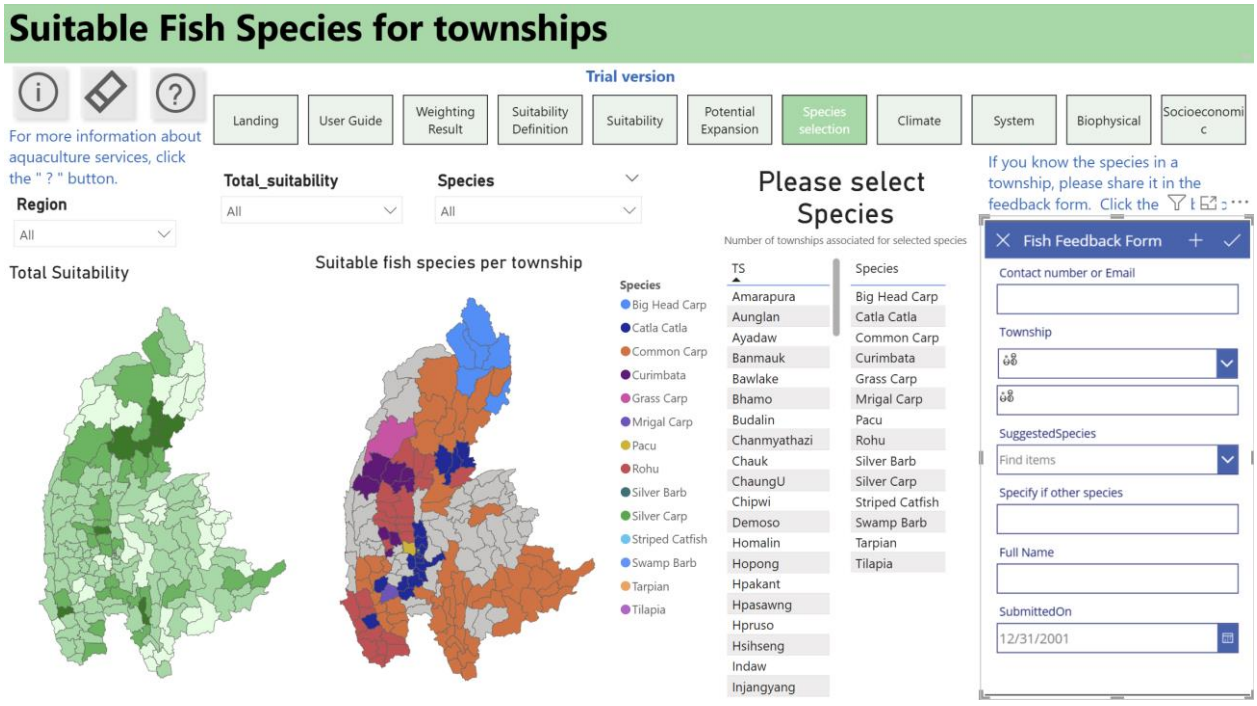

Figure 3. Suitable Fish Species for townships

Capacity Building and Training

To maximize the impact of Aqua-DST, hands-on training programs have been conducted in different townships in Myanmar. These two-day trainings provided stakeholders—including government agencies, NGOs, and private investors—with practical skills to navigate the dashboard and apply suitability analysis effectively. So far, **99 participants (including 37 women)** have been trained in using Aqua-DST criteria weighting excel tool and dashboard for informed aquaculture planning.

In the upcoming months, hands-on training of Aqua-DST will be conducted and delivered to relevant stakeholders in Yangon. The trainee selection should be carefully conducted based on these end-user ratios and their computerized skills. An online seminar will be also conducted for all online stakeholders interested in new technologies and aquaculture development. Please feel free to contact us for more information who are interested in the training sessions and online seminar.

Figure 4. Interesting participants' activities in the capacity building trainings (Photo Credited to Shelly Win)

Scaling Up for a Sustainable Future

Moving forward, careful planning is essential for handing over to the host department (DoF) and ensuring the long-term sustainability of Aqua-DST, particularly in terms of data updates and consistency beyond project funding. By integrating data from the Department of Fisheries and other sources, Aqua-DST is set to become the cornerstone of wider application in aquaculture development, planning, and decision-making, ensuring long-term sustainability for aquaculture expansion.

Figure 5. Director General (DoF) and participants in the capacity building training in Naypyitaw, 5 November 2024

The Future of Aquaculture Starts Here

Aqua-DST is more than just a tool—it's a revolution in how we plan and develop aquaculture in a changing climate. By leveraging data-driven insights, decision-makers can create sustainable, climate-resilient fish farming systems that support both livelihoods and food security.

Explore the trial version of **Aqua-DST** here: Aqua-DST Dashboard

Join us in shaping the future of aquaculture!